Summary and Findings of the West African Cotton Assessment September 25–October 14, 2004

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DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

Contents

Acronyms

AATF	African Agricultural Technology Foundation
ACT	Agreement on Clothing and Textiles
AfDB	African Development Bank
AFD	*Agence Française de Développement*
AGOA	African Growth and Opportunity Act
AGROPE	*Association des Groupements des Producteurs et Opérateurs Économiques* (Association of Producer Groups and Economic Actors, Bénin)
AIC	*Association Interprofessionnelle du Coton* (Cotton Interprofessional Association, Bénin et Mali)
AMS	Agricultural Marketing Service of USDA
AOPP	*Association des Organisations Professionnelles Paysannes* (Association of Professional Peasant Organizations, Mali)
APCs	*Associations des Producteurs de Coton* (Cotton Producer Associations, Mali)
APEB	*Association Privée des Égreneurs du Bénin* (Association of Private Ginners of Benin)
ARS	Agricultural Research Service of USDA
ATC	*Agents Techniques Coton* (Cotton Extension Agents, Burkina Faso)
AVs	*Associations Villageoises* (Village Associations, Mali and Chad)
BCEAO	*Banque Centrale des États de l'Afrique de l'Ou*est (Central Bank for the West African States)
BNDA	*Banque Nationale de Développement Agricole* (National Agricultural Development Bank, Mali)
BOAD	*Banque Ouest Africaine de Développement* (West African Development Bank)
Bt	*Bacillus thuringiensis*
C-4	Bénin, Burkina Faso, Tchad et Mali
CAGIA	*Coopérative d'Approvisionnement et de Gestion en Intrants Agricoles* (Cooperative for Supply and Management of Agricultural Inputs, Bénin)
CCA	*Chambre de Conciliation et d'Arbitrage* (Chamber for Dispute Resolution and Arbitration, Benin)
CFA	Franc de la Communauté Financière Africaine (WAEMU)
CFC	Common Fund for Commodities
CFDT	*Compagnie Française pour le Développement des Fibres Textiles* (French Company for the Development of Textiles Fibers, later renamed DAGRIS)
CGIAR	Consultative Group for International Agricultural Development
CILSS	*Comité Permanent Inter-États de Lutte contre la Sécheresse dans le Sahel* (Permanent Interstate Committee for Drought Control in the Sahel)
CIRAD	*Centre de Coopération Internationale en Recherche Agronomique pour le Développement* (Center for International Cooperation in Agricultural Research for Development)
CMDT	*Compagnie Malienne de Développement Textile* (Malian Textile Development Company)
COPACO	*Compagnie Cotonnière* (marketing arm of French cotton company Dagris)

CORAF	*Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricoles* (West and Central African Council for Agricultural Research and Development)
Cotontchad	*La Société Cotonnière du Tchad* (CottonChad)
CPAs	Cotton Production Agents, Mali
CPCs	*Coopératives de Producteurs de Coton* (Cotton Producer Cooperatives, Mali)
CSPR	*Centrale de Sécurisation des Paiements et du Recouvrement* (Center for Securitization of Payments and Recovery, Benin)
DAGRIS	*Développement des Agro-industries du Sud* (Development of Southern Agroindustries, France)
DCA	Development Credit Authority
DFID	Department for International Development (UK)
DNAMR	*Direction Nationale de l'Appui au Monde Rural* (National Department for Support to Rural Areas, Mali)
ESITEX	*École Supérieure des Industries Textiles* (Higher School for the Textile Industry)
EU	European Union
FENAPRA	*Fédération Nationale des Producteurs Agricoles* (National Federation of Agricultural Producers, Benin)
FNPCB	*Fédération Nationale des Producteurs de Coton de Burkina Faso* (National Federation of Cotton Producers of Burkina Faso)
FUPRO	*Fédération des Unions de Producteurs du Bénin* (Federation of Producers' Unions of Benin)
FITINA	*Fils et Tissus Naturels d'Afrique* (Textile firm in Mali)
GMOs	Genetically modified organisms
GPCs	*Groupements de Producteurs de Coton* (Cotton Producer Groups, Burkina)
GPDIA	*Groupement Professionnel des Distributeurs des Intrants Agricoles* (Professional Group of Agricultural Input Distributors, Benin)
GV	*Groupements Villageois* (Village Groups, Benin)
HBCU	Historically black college or university
HUICOMA	*Huilerie Cotonnière du Mali* (Cotton Oilseed Processing Company of Mali)
HVI	High-volume instrument
ICAC	International Cotton Advisory Committee
IEHA	Initiative to End Hunger in Africa
IER	*Institut d'Économie Rurale* (Rural Economy Institute, Mali)
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
INERA	*Institut National de l'Environnement et de la Recherche Agronomique* (National Institute for the Environment and Agricultural Research, Burkina)
INRAB	*Institut National des Recherches Agricoles du Bénin* (Benin National Institute for Agricultural Research)
IPM	Integrated pest management (lutte intégrée)
IPPM	Integrated pest and production management
ITMF	International Textile Manufacturers' Federation
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
MFA	Multi-fiber Agreement

MRSC	*Mission de Restructuration du Secteur Coton* (Mission for the Restructuring of the Cotton Sector, Mali)
MT	Metric ton
NARO	National agricultural research organization
NCC	National Cotton Council of America
NCGA	National Cotton Ginners Association
NGO	Non-governmental organization
NEPAD	New Partnership for African Development
NRCS	National Resources Conservation Service
OHVN	*Office de la Haute Vallée du Niger* (Upper Niger River Valley Office, Mali)
ONDR	*Office National de Développement Rural* (National Office of Rural Development, Chad)
ORIAM	*Organizations Rurales des Intrants Agricoles du Mali* (Rural Agricultural Inputs Organizations of Mali)
PASAOP	*Programme d'Appui aux Services Agricoles et aux Organisations Paysannes* (Support Program for Agricultural Services and Peasant Organizations, Mali)
PASE	*Programme d'Appui aux Systemes d'Exploitation en Zone Cotonnière* (Support Program for Farming Systems in the Cotton Zone, Mali)
PBS	Program for Bio-safety Systems
SOFITEX	*Société (Burkinabé) des Fibres Textiles* (Textile Fiber Company of Burkina Faso)
SONAPRA	*Société Nationale pour la Promotion Agricole* (state-owned national company in Benin)
SSA	Sub-Saharan Africa
SYCOV	*Syndicat des Producteurs Cotonniers et Vivriers du Mali* (Union of Cotton and Food Crop Producers of Mali)
SYPAMO	*Syndicat des Producteurs de Coton Agricoles Mali Ouest* (Union of Agricultural Cotton Producers of Western Mali)
SPCK	*Syndicat des Producteurs de Coton de Kita* (Union of Cotton Producers in Kita, Mali)
SYVAC	*Syndicat pour la Valorization des Cultures Cotonnières et Vivrières* (Union for the Improvement of Cotton and Food Crop Culture, Mali)
UDPC	*Union Départementale des Producteurs de Coton* (Departmental Union of Cotton producers, Burkina Faso)
UNPCB	*Union Nationale des Producteurs de Coton du Burkina* (National Union of Cotton Producers of Burkina Faso)
USAID	United States Agency for International Development
USAID/AFR	USAID Africa Bureau
USAID/EGAT	USAID Economic Growth, Agriculture and Trade Bureau
USAID/WARP	USAID West Africa Regional Program
USDA/AMS	United States Department of Agriculture/Agricultural Marketing Service
USDA/ARS	United States Department of Agriculture/Agricultural Research Service
USDA/FAS	United States Department of Agriculture/Foreign Agricultural Service
USG	United States Government
USTR	United States Trade Representative
WAEMU	West African Economic and Monetary Union (UEMOA)
WB	World Bank (Banque Mondiale)
WTO	World Trade Organization

Statement of Purpose:

A rapid assessment of the cotton sector in Mali, Burkina Faso, Chad and Benin was undertaken by the United States Agency for International Development in September and October of 2004. The primary objective of this assessment was to establish a clear understanding on the part of the United States Government of the current state of cotton production, transformation and consumption in four West African nations. The findings of this assessment are presented in this report with observations as to potential solutions and interventions to improve production, transformation and marketing of cotton and its byproducts.

1. Introduction

For many decades, cotton has been the most important exportable crop for Benin, Burkina Faso, Chad and Mali (hereafter referred to as the C-4). Yet "white gold" (as cotton is known) achieved another level of importance during the last half of the 1f990s. Between the 1994/95 and 1999/2000 seasons, harvested area in the C-4 rose 62%—from 100,000 hectares to 162,000. Although yields varied from year to year because of rainfall and pest pressure, there was a clear upward trend during this entire period. New peaks in overall output of cotton lint were reached in 1997 (215,549 metric tons) and 2001 (239,499 MT).

There were several reasons for the expansion. First, all four governments were in serious need of an engine of economic growth and reliable source of public finance. Secondly, there were expectations of rising prices for cotton, and in fact an extraordinary world average price of US$0.91/lb[1] was obtained for the 1994/95 season. Thirdly, a major (50 to 100 CFA[2]/French franc) devaluation of the regional currency occurred in January of 1994, which made Franc Zone cotton more competitive on world markets, and more desirable as a source of foreign exchange.

Anecdotal information obtained in the field suggests that all four countries still hope to grow their industries beyond the 2003/2004 area planted, which was 385,000 hectares in Benin; 400,000 hectares in Burkina Faso; 425,000 hectares in Chad; and 540,000 hectares in Mali. Similarly, they apparently aspire to surpass the 2003/2004 production levels, which were 146,965 MT in Benin; 200,308 MT in Burkina Faso; 69,672 MT in Chad; and 244,292 MT in Mali.3 Yet it is not clear that the fundamentals of global supply and demand for cotton lint and C-4 competitiveness warrant continued expansion, or that farmers will want to increase plantings, given likely lint and seed cotton prices in the coming years.

Nonetheless, it is obvious that cotton is of critical and increasing importance to the C-4 countries. Although not all farmers grow cotton (about one-third in Benin[4], for example), in all four countries it has served as the main driver of economic growth, employment, and incomes. It is the main economic activity of more than one million households in the C-4, and provides livelihoods for more than ten million farmers. Cotton typically accounts for 5 to 10% of total GDP.[5] It generates a huge share of exports (about 50% for Mali, 60% for Burkina Faso, 75%

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1 The relevant price index for West African cotton lint is Cotlook "A" NE. The Cotlook A Index is the average of the 5 lowest quotations of 16 styles of cotton (Middling 1-3/32") traded in North European ports from these origins: Australia, Brazil, China, Francophone Africa, Greece, India, Mexico, Pakistan, Paraguay, Spain, Syria, Tanzania, Turkey, the United States, and Uzbekistan. The prices are expressed in U.S. cents per pound, c.i.f. North Europe, cash against documents on arrival of vessel, including profit and agent's commission.

2 The CFA (or FCFA) is the currency used in all of the C-4 countries. It stands for "franc de la Communauté financière africaine," or franc of the African Financial Community (WAEMU).

3 USDA/FAS, Production, Supply & Distribution (PS&D) Database, August 13, 2004.

4 Minot. N and L. Daniels, *Impact of Global Cotton Markets on Rural Poverty in Benin,* IFPRI, November 2002.

5 Baffes, J., *Cotton: Market Setting, Issues, Policies, and Facts,* World Bank, February 2004.

for Benin, 90% of non-oil exports for Chad). Finally, it is a major source of government revenues (generating about 11% of fiscal and para-fiscal revenues in Mali, for example), which makes all of the C-4 governments very concerned stakeholders in the future of the sector.

Yet from a development point of view, many questions can and should be posed about the trajectory that the C-4 cotton sector has taken:

- Does the growth in production reflect productivity gains or just more area planted?
- Does the expansion in area imply use of more marginal lands?
- How can expansion occur at all in the context of a long-term decline in world prices (averaging 0.9%/year between 1985 and 2002[6]) as cotton fiber loses market share to synthetics?
- Is the growth a response to real opportunity or simply a reaction to artificially high guaranteed prices?
- What are the real costs of maintaining such prices in the face of a sudden price drop, and in the end who or what covers such costs?
- Conversely, when prices spike as they did for the 2003/04 season (to a six-year high of $.68/lb), does the farmer who accepted a pre-set price at a lower level reap a fair share of the resulting windfall?
- What features of the policy environment and industry structure/conduct within the four countries explain the apparent differences in performance over time in terms of area planted, overall output, average price, net returns to farmers, and stability?
- How have/will the processes of privatization and liberalization affect industry performance, farmer welfare and the economy?

It is important to answer such questions before any external assistance is contemplated or any development intervention designed.

[6] Ibid.

2. Background

Researchers attribute the long-term price decline in cotton, as well as the sudden drop in late 2001, to a confluence of many factors. First of all, **global demand for cotton has been increasing slowly—just 0.7 percent annually during the last 15 years**. ICAC projects future growth of cotton consumption to be about 1.8% per year, which is about the same as global population growth but less than the projected 2.4% growth rate for fibers as a whole. The main reason is that synthetics have been able to compete successfully against man-made fibers like cotton because of their price, consistent quality, and superior spinning characteristics for some uses. These advantages helped force cotton's share of market to 40% or less, as compared with 65% four decades earlier.

According to analyst Xinshen Diao[7] of the International Food Policy Research Institute (IFPRI), **lower costs of production of cotton,** achieved through technological improvements and yield increases, have also contributed to the downward trend in prices. World average cotton yield has doubled in forty years, from 300 kg/ha in the early 1960s to 600 kg/ha in the late 1990s. **Large-scale plantings** in areas such as Mato Grosso in Brazil have benefited from greater economies of scale and widespread mechanization.

Economic shocks have also been a contributing factor. For example, the Asian financial crisis caused lint imports into Indonesia, Korea, and Thailand to fall after 1998. Since these countries accounted for more than 15% of world import demand for cotton lint, it was not surprising that global prices fell particularly fast in 1998 and 1999. The events of 9/11 also depressed demand for all merchandise, including cotton-rich textiles and apparel. The effective demand for African cotton lint has also been adversely affected by the **shift in consumption toward Asia** and developing countries, which tend to source more from the United States and Australia. Meanwhile, mill consumption in the EU, which had been the traditional natural market for C-4 lint, has been falling as spinning capacity has shifted toward Asia.

From July 17 to July 24, officials from the U.S. Department of Agriculture (USDA) and USAID, interested non-government officials, and the C-4 ministers in charge of agriculture and trade accompanied the Ambassadors of Benin, Burkina Faso, Mali and Chad on a cotton industry orientation program. The program was co-hosted by the U.S. National Cotton Council. The objectives were to (1) visit cotton-growing areas in North Carolina, Tennessee, and Texas similar to West African cotton areas; (2) visit centers of excellence and representative processing, laboratory, and training facilities; (3) share information on the advantages of using cotton classing standards; and (4) explore mutual trade, investment, and capacity-building opportunities.

Of concern to West African ministers during this visit were the following issues.

- Assistance in scientific and technology research
- Improving the access of African farmers to quality inputs at costs that will enhance the competitiveness of the sector

[7] Diao, X., "Growth Opportunities in the African Cotton Sector," November 2003

- Environment and conservation of water and soil
- Strengthening the capacity of the actors in the cotton sector
- Improvement of infrastructure
- Assistance in cotton processing

3. Overview of the West African Cotton Assessment

The primary goal of the current assessment is to develop a comprehensive understanding of the cotton sector in the C-4 countries. The more specific objectives of the assessment are to understand the constraints to production, transformation and utilization of locally produced cotton and to identify, analyze and prioritize potential development interventions in support of the West African cotton sector (broadly defined to include textiles and apparel), with particular emphasis on the C-4 countries.

The assessment team consisted of eleven members, including experts from USAID, USDA, Tuskegee University, the National Cotton Council, and private sector consultants. Fields of expertise included biotechnology; plant breeding; plant protection; cotton farming; ginning; classing; marketing; finance; business management; agricultural economics; socioeconomics; manufacturing; and development policy and planning.

It was decided that two members of the delegation would travel to Senegal as well during the first trip, because of its importance for textiles and apparel, and also for maritime transport. Because of scheduling and budgetary limitations, not all individuals could travel to all countries.

4. Overall Findings

This section provides an overview of the crosscutting findings about the C-4 as a group that lead to the prioritization of needs and proposals for intervention that will be described later. **However, it is crucial to recognize that there are significant differences among the C-4 countries as well as similarities**. Additional detail is therefore provided in the country-specific reports, where exceptions to the generalizations are highlighted as well.

4.1 The Importance of the Cotton Sector

The economic reasons why cotton is critical to the C-4 economies were mentioned earlier. Yet there are additional, less obvious reasons why it is also important to the agricultural sector in general and to farmer livelihoods in particular.

- Cotton is a fairly forgiving crop that can be grown either with a low input/low output strategy, which is good for resource-poor farmers, or else as a high input/high output strategy, which is good for commercial farmers and agricultural productivity.
- Cotton is also the crop of last resort for farmers on marginal lands, which helps keep them alive but can be a mixed blessing because of the environmental degradation it causes.
- Farmers who grow cotton enjoy more price and payment security than exists for any other significant crop in the C-4 countries.
- Cotton is the most drought-tolerant major cash crop in the region. Total failure of cotton crop in the C-4 is less frequent than for companion food crops, including maize.
- Fertilizers and pesticides provided in-kind for cotton are often diverted partially to food crops for which there is no production or supplier credit. This does lower cotton yields somewhat, yet at the same time it raises yields of the recipient food crops, especially maize.
- Residual fertilizers and pesticides left over in a field where cotton has just been grown can have a positive impact on the next crop in the rotation.

Moreover, since the cotton sector is not self-contained, but rather includes rotation crops for food and feed, it can generate positive externalities. On the other hand, since cotton can cause environmental damage, particularly soil degradation and pesticide run-off, the potential negative externalities must also be acknowledged.

4.2 The Conundrum of Dependence

Historically speaking, because of the integrated system approach and State ownership, cotton revenues have paid directly and indirectly for considerable infrastructure (such as access roads, water supply and sanitation systems, dispensaries, community buildings) and social services (such as rural health and basic education). These are significant contributions to development.

Yet it is widely recognized that the C-4's great dependence on cotton is neither prudent nor healthy. After all, cotton is a commodity characterized by considerable price volatility within and between seasons, and the long-term price outlook is not especially good because growth in consumption is slow and the tendency is toward oversupply. Unfortunately diversification

efforts within agriculture and beyond (with the exception of gold in Mali and oil in Chad) have not been very successful in the aggregate in the C-4 countries, which partly explains the vehemence and frustration that underlie the Sectoral Initiative.

4.3 The State of Evolution of the Sector

The structure and conduct of the C-4 cotton sectors can be traced back fifty years or more, when the French developed the "*filière*" concept (i.e., integrated cotton-based agricultural and rural development). Under that system, developmental and commercial operations were handled by the French state enterprise *Compagnie Française pour le Développement des Fibres Textiles* (CFDT). Research and extension were handled by France's *Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD).*

After independence, the model was largely retained, but with a different form of ownership. The new countries established state-owned national companies[8] in which CFDT kept a minority share, usually up to 40%. COPACO (75% CFDT owned) had a monopoly on export marketing, at least initially. CFDT became "DAGRIS" in 2001, after its own partial privatization, which left the French government with a 40% share. The parastatals of immediate interest are SONAPRA in Benin, SOFITEX in Burkina, Cotontchad in Chad, and CMDT in Mali. For many years these national companies provided seed-to-market services: finance, inputs, ginning, and marketing, as well as ancillary rural infrastructure and support programs.

One of the main reasons that the *filière* concept remains attractive to the region is the widely recognized **need to have a fully integrated supply chain** in which critical goods and services such as agrochemicals, credit, and transport are delivered efficiently when needed and at reasonable cost, in which the ginning and marketing processes proceed in an orderly manner, and in which the resulting financial flows are distributed promptly and fairly to producer and creditor alike. In a well-developed market system, where all the appropriate institutions exist—such as functioning credit markets, adequate contract enforcement, and good marketing information—the invisible hand of the market supplies critical functions. Unfortunately, not many of those conditions exist in the C-4 countries. Hence the emergence of the "inter-professional association," which is a service organization designed to ensure the delivery of critical services, at least until the private input, ginning and/or marketing companies have become established enough to make the input and output markets function well on their own.

Another selling point for the *filière* concept has been its ability to **maintain a vital stream of support services, especially in the areas of research, extension, and infrastructure**. Again, in a fully developed economy such public goods are handled effectively by the state, but in the C-4 countries the government is stretched very thin in terms of resources and capabilities.

Uncertainty concerning both supply chain integrity/management and willingness/ability to deal with public and mixed goods **has retarded the privatization and liberalization process**. This is understandable, because the stakes are very high for government, industry and the poor farmer alike.

[8] Mali's CMDT did not form until in 1974, considerably after independence.

In actuality, **privatization within the C-4 has proceeded differently from country to country** in terms of pace, sequencing, and target structure. Benin has gone the farthest in terms of privatization, starting in the late 1990s with inputs, and then dealing with marketing, and most recently, concluding the sell-off of gins. Burkina took a different approach, opting to privatize by zone. It was also the first country to give producer groups a real share in ginning and marketing by ceding 30% of the national cotton company SOFITEX to UNPCB (*Union Nationale des Producteurs de Coton du Burkina)* in 1997. Although Mali has been preparing the way for several years, its reform seems to have stalled, so much so that it may not occur until 2008 (i.e., after the 2007 elections). Chad is just beginning the privatization process. In both Mali and Chad, the parastatals CMDT and Cotontchad still dominate virtually all aspects of the sector.

Liberalization of key aspects of the cotton sector is nascent at best. In theory, within the C-4 countries farmers do have the right to decide whether to grow cotton, and if so how much area. But in practice, the hook of inputs-in-kind-on-credit is so strong that farmers must stay in the cotton deal to some extent in order to fertilize their maize and other food crops. In addition, there is no real choice in the C-4 countries as to which variety to plant. Throughout the region, seeds are provided in kind. Since the grower never knows what even the book price might have been for the seed, he cannot take that into account in deciding how much cotton to plant and how much seed to use.

Similarly, fertilizer and pesticide recommendations are generally set for the entire country by the agricultural research organizations, with two or perhaps three variations—usually northern versus central and southern growing areas. Very few producers have the requisite understanding of soil chemistry and crop physiology to make adjustments in formulation, and almost no soil testing is done anyway. The pricing for agrochemicals is generally pan-territorial, sometimes adjusted for transport differentials, more often not. This situation introduces distortions in the system, in effect protecting and subsidizing the producers in distant areas who in theory should probably be doing something else (but admittedly have few options).

Since seed cotton prices are fixed, there is no price competition as such for raw materials. However, before the money is given to the farmer, the cost of inputs given to the farmer on credit is subtracted. In newly privatized countries this may give rise to problems. In Benin, a highly controversial maverick ginner and marketer has upset the system of zonal allocations and gin-provided input credit by offering a cash price that does not reflect provision (by his company) of input credit, nor does it respect input credit granted by others.

Farmer choice of where to gin is constrained both by credit received and by zonal allocations. There is no competition based on prices charged for ginning, because (unlike in the developed countries, where gins are basically service operations), ginning prices are hidden within final seasonal results, neither of which are really known by the growers. In sum, with the exception of part of Burkina Faso, where grower participation in the price setting, ginning and marketing process is farther advanced, C-4 farmers remain quite disconnected from price signals and market disciplines. Privatization and liberalization have not gone hand in hand, as one might have expected.

4.4 Other Issues in Structure, Conduct, or Performance

Various reputable studies suggest that **economic inefficiency** in the national cotton companies in the C-4 countries and elsewhere in the region has reduced potential profits and that government withdrawal of funds in good years, as well as rent-seeking behavior within and around the supply chain (including suppliers) has siphoned away resources that could and should have gone to the farmers. However, it is fair to add that there is a potential for efficiency gains in a more competitive environment with functioning markets for put inputs and outputs.

Hard data on the magnitude or distribution of cotton incomes is lacking, either because of concentration in public hands or the matter of privacy after input, ginning and/or marketing operations are privatized. According to Baffes (2004), the prices that West African producers receive are usually very low in comparison with other developing countries. For example, from 1983 until 1995, farmers in Zimbabwe and India received 37 and 60 percent more respectively for similar types of cotton. Since the 1994 CFA/French franc devaluation took place, prices in Zimbabwe and India have been 80 percent to 100 percent higher than prices in West Africa.

Part of the differential does reflect the additional services that the CFA zone cotton companies provide, such as extension, rural road maintenance, and transportation to move seed cotton to gins. Yet **a large part of the gap between domestic and export prices of cotton is attributable to government taxes** (export taxes, taxes on parastatal profits, etc.) This money has in turn been used to subsidize other groups connected to the cotton pipeline, particularly domestic oil and meal companies that benefit from low prices for cotton seed (e.g., HUICOMA in Mali) and, sometimes, local textile firms that get low prices for cotton lint (e.g., FITINA in Mali).

One of the main justifications for fixing prices for seed cotton is to reduce the risk to farmers. Yet many informed observers assert that **whatever benefits may accrue to producers from reduced uncertainty and price volatility are more than offset by the income foregone, even in good years**. According to World Bank analysts, in times of high world prices most of the national cotton companies have tended to absorb the extra profits in a less than transparent manner, without passing a reasonable share back to the farmers. At the same time, the C-4 governments have taxed the sector heavily to finance government expenditures in other areas and sectors. On the other hand, when prices have fallen, most of the parastatals have tended to turn to the national governments for help because they rarely had maintained sufficient reserves to buffer the shock. Since the C-4 governments have little recourse to international financial markets, in years of poor prices this means seeking budgetary support from foreign donors.

Although information on the return to the farmer is not well documented or understood, **a general perception of lack of transparency** contributes to the sense that median returns have been too low over time and the farmer's share of the world price is unfair. Yet because of their precarious situation, **farmers may actually value certainty of return and payment more than higher median long-term return**, which is the objective function on which World Bank reforms are predicated. It is not wrong to be risk-averse when failing to get any return on their labor can mean hunger and even death by starvation for the poorest cotton farmers and their families.

For many years, the parastatals retained almost full control over planting, ginning and marketing decisions, as well as control over the means of production. Since C-4 farmers do not keep title to the seed cotton once they take it to village assembly points, and production from more than one village is often put into a single truck without any means of preserving its identity, C-4 farmers (except perhaps in the SOFITEX-run zone in Burkina Faso) have no real stake in or control over the supply chain. **Under the traditional *filière* system, the lack of incentives for farmers or true participation by them in the supply chain, as well as asymmetric information, militate against quality, loyalty, and reasonableness in seed cotton price negotiations**.

Scale economies in finance, input supply and distribution, ginning, transport and marketing of cotton all favor having a limited number of actors. It must be recognized that the national cotton company model does facilitate management and coordination. On the other hand, excessive reliance on monopolistic enterprises, starting with CFDT and then the national cotton companies, seems to have encouraged top-down decision-making, inefficiency of operations, less than transparent distribution of sectoral income, and (many have said) outright corruption.

It is premature and risky to conclude definitively how best to privatize and how much/how quickly to liberalize in the C-4 countries such as Mali and Chad that are just starting down that path. Experiences in South Africa, Zimbabwe and Zambia seem to have worked better than any attempt in West Africa. The Burkina model shows great promise, but it is only partially privatized still, so not definitive. ***This challenge must be approached with extreme caution, because a misstep could cause the sector to fail, economies to contract, farm families to fall deeper into debt and poverty, and governments to fall.***

It appears that the ideal future structure may be a self-managed oligopsony— i.e., a limited number of strong input, ginning and marketing companies, not necessarily integrated vertically—in which producers have a share of each action. In theory such a system should permit liberalization of most or even all controls over prices, choice of gin, and marketing. Yet for reasons explained earlier, there is still great trepidation in the C-4 about dropping pan-territorial price for inputs and fixed prices for seed cotton.

Eventually, **one could envision vertically integrated private subsystems with an assigned geographic focus, but in the process some public and mixed goods and services might be lost**. In general, the transition to zone-based monopsony control seems to dilute many of the critical functions addressed by the *filière* system. As a means of ensuring the critical functions, the “inter-professional association” model already present in Benin, recently proposed for Mali, and now being discussed in Chad, does seem logical. Yet it is probably a transitional mechanism that would cease to be necessary under full privatization, assuming the invisible hand starts to work as it should.

As privatization and liberalization proceed, **it is important to achieve the proper balance between competition and coordination**. Some competition should exist at all stages of the supply chain, and also across producing zones. Yet as the Benin case has shown, predatory sourcing outside designated domains can be very disruptive, especially when it leads to side selling in total disregard for input or production credit received from a designated gin or

marketer.

Turning to the question of competitiveness, the C-4 countries do have some natural comparative advantage because of growing conditions. Yet **their most important advantage is still the low opportunity cost of labor, which helps the C-4 to be among the lowest cost producers of both seed cotton and cotton lint in the world.**

When everything else is done right in the present system, the quality of C-4 cotton, because it is hand harvested, can be very competitive, although perhaps not as unique or superior as industry promoters claim because the hand harvesting. Differences in seasonality of production, access, tariff treatment, language of business, and cultural affinity also convey some additional comparative advantage, especially for the EU market.

C-4 lint generally has a good image and a recognized, accepted position in global markets. Yet the International Textile Manufacturers Federation (ITMF) biennial survey of spinners shows that ***contamination is a serious and growing issue***. In 2003, Burkina Faso ranked 14th, Mali 20th, and Benin 21st (out of 75 tested) on a list running from "most contaminated" to "least contaminated" sources of cotton. Polypropylene traces from bits of sacks are the main culprit. With respect to stickiness, which is caused by aphids, Benin ranked 8th among the 75 sources, Mali 11th, Chad 14th, and Burkina Faso 20th. These problems threaten the quality image of hand-picked cotton that marketers for C-4 countries such as DAGRIS' COPACO and other cotton brokers have promoted. One knowledgeable observer in Benin commented that former price premiums are evaporating, presumably because of these contamination issues.

It is widely believed that soil fertility is declining throughout the region, and that cotton is the main cause, despite higher use of fertilizers. Reduced fallow periods, less than optimal crop rotations, and non-replenishment of organic matter all contribute to soil mining. Tillage problems and a lack of water control and retention practices contribute to soil erosion and eventual desertification.

There is also considerable evidence of **misuse of pesticides**, in terms of product quality, misapplication, use on or near food crops, and poor disposal of containers.

Farm yields in the C-4 countries are moderate as compared with major upland cotton competitors, reflecting lack of irrigation and increasing use of marginal lands. Expansion in output is coming mostly from expanding the hectarage planted to cotton. **Yields have peaked and are falling in older lands**, even with more fertilizer, mainly due to declining soil fertility. Diversion of approximately 25% of the national fertilizer allocation to food crops leads to less than optimal use.

Despite these issues, the C-4 countries are among the lowest-cost producers in the world (e.g., Mali is believed to have a 36 cent breakeven point for seed cotton). In addition, **ginning out-turns are generally quite high, in the 42–43% range** (several points above the world average), reflecting hand picking as well as good equipment and operational management.

Continued reliance on pre-set fixed or floor prices for seed cotton, coupled with earliness of

announcement, translates into huge price risk to the entire system. Efforts to adopt forward-selling, hedging and other price risk management mechanisms are nascent; though they are now getting some support from the World Bank and Common Fund for Commodities (CFC). On the other hand, the World Bank seems to be pushing for price stabilization funds, at least for Mali, yet no funding has been found. Private insurance for price or crop risks may be another alternative, perhaps with USAID Development Credit Authority (DCA) support, but such schemes are usually prohibitively expensive. And reportedly even DCA is viewed as too cumbersome by local banks (as the team heard in Mali).

4.5 Development Challenges Facing the C-4 Cotton Sector

The findings summarized above point to challenges as well. Here we highlight the most important ones.

Improving sectoral governance: Lack of transparency and accountability are major issues in the C-4 cotton sectors. It is difficult, perhaps even impossible, to trace all the money flows and calculate what the farmers should reasonably have gotten in terms of final returns. Allegations of rent-seeking behavior are commonly heard.

Privatization: To varying degrees all four countries are moving toward privatization, but at a different pace, and following somewhat different trajectories. Benin has gone the farthest, having just completed privatization of the last 10 SONAPRA gins. Burkina Faso comes next, but the national cotton company SOFITEX remains a major player. Mali has committed in principle: it has set up a restructuring commission, and contracted a study earlier this year on the formation of an Interprofessional Association for Cotton analogous to what exists in Benin> But Mali recently proposed to delay privatization of CMDT until after the next Presidential election, i.e., 2007.

Liberalization: None of the C-4 countries has moved very far in the direction of liberalization. In theory farmers are free to plant as they wish, yet input credit and floor or fixed prices are tools still used to influence farmer decisions. Input prices are fixed, often across the entire country, with some adjustment for transport cost differentials. Seed cotton prices remain fixed as well, sometimes in the form of floor prices, sometimes an absolute price, and sometimes with a post-season rebate. If the Benin case is a fair indicator of what can happen after privatization, disrespect for assigned territories, side selling of seed cotton, and non-payment of input credit are problems that must be anticipated and prevented even before privatization begins.

Getting the prices right: As long as a floor or fixed price system remains, choosing the actual price to announce is a huge challenge. For example, for the most recent season the seed cotton price for farmers in Burkina Faso was set at 175 CFA/kg for Choice 1 grade, 140 CFA/kg for Choice 2 grade, and 105 CFA/kg for Choice 3 grade. A transportation charge of 20 CFA/kg was charged to the farmers. To counterbalance the low price caused by an oversupplied world market, an additional 35 CFA/kg was to be paid out of the price stabilization fund, making good use of profits made by SOFITEX in previous years. Yet if cotton lint prices do not improve in the coming season, there may not be enough reserve available to supplement farmer incomes again. If that happens, according to SOFITEX officials, cotton production in Burkina Faso will probably fall.

Mali was caught in a real dilemma, having announced a 240 CFA/kg seed cotton price in April of 2004, then watching world lint prices fall to a level that would justify no more than 190 CFA. The high price can be traced back to what happened in the 2000/2001 season, when Mali tried to do the right thing as it foresaw that prices would fall, only to cause a producer boycott that led to a huge contraction in area and production. This affected not just the farmers and their families, but government revenue, and the entire economy. Yet the pendulum seems to have swung too far the other way during the past season.

This year Benin had a slightly different problem, delaying the announcement of seed cotton prices well into the planting season. Of course this dampened enthusiasm for planting and left small farmers exposed to considerable price risk.

Input quality and price: Timely provision of high-quality agricultural inputs is critical to success in cotton. People interviewed in Benin claimed problems with the quality of fertilizers. Since small cotton farmers lack cash, they need input credit, whether from an agricultural bank, the national cotton company, the agrochemical suppliers, or (when they exist) the private ginners. Many cannot get bank credit at all, for lack of collateral or agricultural lending. The 9–12 month credit cycle and associated risk to suppliers inevitably raises input costs and prices, contributing to the sense that farmers are not getting fair prices on fertilizers and pesticides. It is not clear whether pooled purchases on world market would be better than current tendering. Work done in recent years by the International Fertilizer Development Center (IFDC), IFPRI and others on the agrochemical procurement system needs to be closely examined to see whether lower-cost solutions are really feasible.

Getting the incentives right: Except perhaps for Burkina Faso, where conservative price-setting and maintenance of a reserve have kept the system fairly healthy, continuation of a fixed or floor price system for seed cotton in the C-4 countries provides a false sense of security. Over time it may be depriving farmers of a greater share of sectoral income than they would get under a more market-sensitive system. In addition, the fact that very high percentages of seed cotton are rated "first grade" (a distinction often obtained through small bribes rather than real care) undermine overall quality and remove incentives to improve. Moreover, the lack of traceability for seed cotton after delivery to assembly points undermines contamination control and presents a moral hazard, since some individuals deliver poor quality that lowers the village's overall quality rating. Lack of traceability therefore affects both initial prices and rebate payments after the season is over.

Managing the area planted: A related challenge in the C-4 countries has been how to encourage small farmers to plant a total area appropriate to projected supply/demand conditions. Announcing seed cotton prices ahead of the season distorts production decisions and adds greatly to market risk. On the other hand, if no floor price existed, the general belief is that total acreage and production would fall dramatically. Several countries have used the "*ristourne*" system, which allows a lower pre-season price to individual farmers, then a later increment paid to village groups (which use it for community projects). This has the advantage of reducing some of the risk, and in theory rewarding performance by the whole cotton system.

Building capacity in producer organizations: The emergence in Benin of *groupements villageois* (village groups), in Burkina Faso of *groupements de producteurs de coton* (groups of cotton producers), and in Mali and Chad of *associations villageoises* (village associations) appears to be a positive development. They can and do play a useful role in assembly of seed cotton, distribution of payments, and allocation of the "*ristourne*" rebate (where it is used) to useful purposes. Yet rent-seeking behavior at the village level, and the failure of some individuals to repay input credit for which everyone has assumed joint accountability, seem to be causing a proliferation and fragmentation of village-level groups. Reportedly most village groups are not capable of acting in a business-like manner, or of delivering mixed goods that the government can no longer provide. As an alternative, cooperatives are forming in some of the countries—Mali for example--and they are getting some assistance from the *Agence*

Française de Développement (AFD) and from NGOs.

As far as the second-tier or national associations are concerned, judging from what was seen in the field, they are not generally ready to assume an active role in privatized input, ginning or marketing enterprises. Sometimes it is because they are essentially lobbying organizations (as with the union in Mali). At other times it is because they do not have a good grasp of the overall industry and global trading system for lint and by-products.

Capacity building for the large number of private agricultural organizations is likely to be a massive, expensive, slow undertaking. Yet if it is not done, the privatization process will simply mean a change from a single parastatal to a cartel of several private enterprises acting in a similarly imperious, non-transparent manner.

Dealing appropriately with bio-engineered planting materials: The major producing countries for cotton worldwide are adopting Bt cotton, and they are finding that the benefits far outweigh the costs or risks. Allowing Bt cotton (or other genetically modified organisms) is a question of preference and sovereignty, so the USG should probably not get involved directly in the decision-making process. Yet all C-4 countries should be encouraged to move toward best practices in bio-safety, and need help with appropriate legislation, training, and public awareness. Burkina Faso has moved aggressively on Bt cotton. Mali is setting the stage with a bio-safety protocol. Benin has been more cautious, partly due to NGO pressure. Apparently Chad is not yet considering Bt cotton seriously.

Improving the seed system: Historically, the C-4 depended largely on the French research institution CIRAD to help improve and maintain germplasm. Even with privatization, the state still largely controls foundation seed and multiplication in the region. As privatization proceeds, multiplication and distribution should also become private. However, this may require charging openly for seed, which until now has been given in-kind, without specific charge. In the C-4, because of concerns about unreliable germination, three seeds are planted per hole rather than one, which implies excess seed consumption, use of seed that should have been discarded, excess transport costs for delivering seed, and excess labor in culling the weaker plants shortly after germination. De-linting of cotton seed is generally not practiced in the region, even though it allows separation of good, vigorous heavy seed from less vigorous lighter seed that is more prone to pest and disease attack, and that will result in weak crops with poor root systems and fragile superstructure. Burkina Faso is the only C-4 country that has a commercial de-linting facility, and it is building another.

Better pest and disease control: Although C-4 cotton is not a monoculture because of rotations and fallow periods, there is increasing evidence of pest and disease resistance, most recently with pyrethroids in the late 1990s, after which a significant increase in the use of Endosulfan occurred. The latter has been associated with serious pesticide misuse. Continual expansion in area planted, coupled with more intensive cultivation on existing farms, will necessitate increased use of IPM (integrated pest management) and IPPM (integrated pest and production management).

Improving post-harvest handling and logistics: The current system of delivery of small lots by each farmer to village-level assembly points, then sorting, grading, and combining product, and finally ‘evacuating’ it to the gin in open vehicles leads to significant economic inefficiencies

and losses in quality (especially due to contamination), as well as quantity. The use of modules and module feeders, or some similar technology appropriate to the West African production system, to compress and protect the cotton and lower transport costs should be considered in certain situations. The use of polypropylene sacks is particularly harmful due to contamination of the cotton lint by polypropylene fiber, because once mixed with the seed cotton the fibers are broken up very finely by the ginning process, become invisible during spinning, and then only show up in final fabrics where they will not absorb any dye. Rejection of final fabric, or worse still of finished garments, is extremely expensive in terms of claims and lost business. Providing free cotton bags and coated covers, along with a major public awareness campaign as to why contamination is hurting the quality image and overall profitability of the sector, would be major steps toward reducing contamination.

Improving the ginning process: Generally the ginning equipment is good, and in some cases equal to the best in the United States, as the ginning machinery is of U.S. manufacture in almost all cases. High lint out-turns of 42–44% not only reflect hand harvesting, which leaves less trash in the seed cotton, but also suggest that the ginning equipment is being operated well. Yet as privatization proceeds, as gins are sold off, and as small farmer groups take shares, these processing yields may begin to deteriorate in the absence of central control. So the possibility of a West African ginning school patterned after the U.S. model but with significant local adaptation should be considered.

Improving seed cotton grading and lint classing: As with most of the SSA countries, the C-4 countries perform seed cotton grading, based mainly on trash and stain, with two or three fairly subjective grades, and little price differential. This does not occur in developed countries, where growers retain title through ginning, and therefore sell based on classing. While the C-4 has some high-volume instrument (HVI) testing equipment, the required controlled conditions are not met, so results are dubious and not used for marketing. HVI testing of C-4 lint properly done in France is indeed used for marketing, but the results are not transparent enough, nor are they timely enough to adjust growing, harvesting or ginning conditions. On the other hand, a single complete HVI facility costs more than $3 million. Moreover, it is not clear where facilities should be sited in the C-4 countries, power outages are common, and climate control is a problem. While instrument-based classing should be taught and encouraged, it may be years before the processes of privatization go far enough to make it pay commercially in the region.

Utilization and marketing of cottonseed: Cotton plants actually yield more cottonseed than lint (1.62 to 1 ratio by weight), so using the cottonseed is just as important as the seed cotton. In the United States, just 5% of the cottonseed is saved for planting, but the use of fuzzy seed in the C-4 may triple the ratio. In countries where farmers retain title through ginning, cottonseed generates about 15% of farm income. Where the gin retains the cottonseed, as in U.S. and Australia, ginning prices are adjusted accordingly. Since in West Africa producers sell their seed cotton to the ginning company, they get little or no credit for the net value (oil, meal, linters, and hulls) of the cottonseed. Most cottonseed is processed locally by parastatal or private oilseed crushing plants, which are mostly operating at about 30% of capacity and therefore prize it highly. Often they have preferential rights, and the prices set or offered may not reflect the world oilseed market price or alternative local uses. Since cottonseed spoils rapidly, proper storage is crucial during the peak season. It appears to be deficient in the C-4.

The resulting distortions and losses affect the availability and price of cottonseed oil for human consumption, as well as of cottonseed cake for use as feed for cattle or oxen.

Cotton price risk management: Although some future selling does occur in the C-4, and it can be expected to increase as privatization proceeds, the use of cotton futures is much less common than in developed countries, and apparently does not approach the one-third of expected volume that would seem to be prudent. Similarly, hedging for exchange rate risks is apparently rarely used, even though the CFA franc is tied to the Euro while inputs and cotton are tied to the U.S. dollar. Lastly there is no price or crop insurance. All of these risks threaten the financial profitability of each season as well as the long-term viability of the cotton sector.

Dealing with the cost-price squeeze: The ongoing losing battle between natural and synthetic fibers means that the long-term trend for lint prices will continue downward, at least in real terms. Meanwhile, with petroleum prices at record levels, and no relief in sight, prices for fertilizers and some agrochemicals are likely to stay high. This situation demands continual advances in productivity and competitiveness.

Increasing sectoral value added: Cotton-related exports by the C-4 primarily take the form of cotton lint, “not carded or combed”. As much as 98% of all lint produced is exported, mostly to Asia and the EU. Only Chad regularly exports (a modest volume of) cotton yarn. The region would like to increase local value added, by processing at least 10% of lint volume. Yet generally the spinning, weaving, and dyeing industries are small and uncompetitive due to unadjusted lint prices, small scale and out-of-date technology and equipment, high utility costs, high inland freight/border costs, high port charges, and often a lack of marketing know-how and know-who. Individual enterprises can be “made” more competitive artificially through subsidization, but this approach is neither widely applicable nor sustainable, and can only be justified based on “infant industry” or “country cost” arguments.

5. Potential Development Interventions

Based on the extensive literature that exists on West African cotton, and what was seen and heard on the field visits, the assessment team concluded that a West African cotton development program might include two basic elements: (1) policy, structural, and institutional reform; and (2) technological and organizational change.

Clearly there is an interaction between the two, in that technological change tends to be less effective when it occurs without higher-level reforms. On the other hand, higher-level reforms that do not take into account technological change sweeping the industry tend to be ineffective as well. Therefore, a successful development approach must balance policy reform /regulatory climate improvement with improvements in the technological and organizational structures affecting the sector.

Knowing that the World Bank has been struggling with policy reform in the West African Cotton Sector for almost a decade and that the EU has recently committed to working in the same arena, the sense of the assessment team was that the USG should collaborate on policy reform issues with the EU and World Bank.

Consistent with the need to fill the information gap in the area of technological innovation and based on observation, fifteen potential development interventions involving technological/organizational change are summarized briefly below. These interventions are presented in order to stimulate discussion on how to improve the cotton sector in West Africa but do not suggest any decisions on development assistance at this time.

5.1 Strengthen Private Agricultural Organizations

The C-4 cotton sectors are all characterized by (1) a rich mixture of economic actors either directly or indirectly involved in the supply chain, and (2) support institutions, such as public institutions, regional development authorities, private sector service organizations, task-specific entities, and NGOs. Within the *filière* model, economic actors are sometimes described as “families” of producers, input distributors, ginners, oilseed crushers, transporters, and financial intermediaries. In some cases these families organize themselves formally into associations, but sometimes not.

Strengthening the large number and great diversity of private agricultural organizations in the C-4 countries is likely to be a massive, expensive, slow undertaking. Yet if it is not done, the privatization process will simply signify a change from monopsonistic and paternalistic control by a single parastatal, to oligopsonistic control by a cartel of several private enterprises with regional concessions.

5.2 Link US and West African Agricultural Research Organizations

Agricultural research institutions in the United States have had collegial and fruitful exchanges of students, professors and researchers from/to West Africa for many decades. The topics have been wide-ranging: soil science, irrigation, agricultural engineering, genetics, plant and animal breeding, crop protection, animal disease control, seed science and technology, animal

husbandry, crop production, range management, and so on. Many programs were theme-specific, for instance, management of tropical soils. The mechanisms were varied as well: Title XII grants and cooperative agreements, Cooperative Research Support Programs, Cochran Fellowships, and so on.

Priority challenges might include soil degradation; declining soil fertility; pest and disease resistance; IPM; and plant breeding for ginning, spinning or weaving characteristics, to mention just a few.

5.3 Improve the Enabling Environment for Agricultural Biotechnology

Historically cotton has been one of the crops most often criticized by environmentalists for its reliance on agrochemicals. Not only did heavy use result in pest resistance to insecticides, but also it sometimes led to contamination of soil and water resources and/or toxic impacts on workers or people living near cotton producing areas. Moreover, as use increased in areas where pests acquired resistance, production costs tended to rise to a point where it was no longer economic to produce cotton. Yet with the advent of agricultural biotechnology, the possibility has arisen of controlling certain important pests at lower cost and with no toxicity to non-target organisms. The income effect of adoption of Bt cotton is important both for small and large farmers.

Most knowledgeable observers agree that in order to effectively and safely implement bioengineered crops in Africa, countries will need to implement a biosafety system to regulate bioengineered products. The safe introduction of any bioengineered crop involves an assessment of risks of introducing the crop. This requires people who are competent in biological sciences with an ability to scientifically assess potential risks and/or benefits of the crop. In addition, there is need for risk management and for inspection and monitoring of crops. This capacity is lacking in most countries in West Africa.

The key components of biosafety frameworks are:

- A government policy on biosafety, often part of a broader policy on biotechnology.
- A regulatory regime for biosafety (includes act and regulations).
- A system to handle notifications or requests for consent for certain activities, such as registration of activities (contained use), field releases, or placing of bio-engineered crop varieties on the market.
- A mechanism for monitoring and inspections.
- A system for public awareness and public information.

5.4 Improve Seed Production, Quality, Certification and Utilization

Getting the best possible planting materials into the hands of farmers in a timely manner and at reasonable cost is the foundation of all crop production. In the view of the assessment team, much can be done to improve the seed system in the C-4 countries as it relates to cotton, and in the process also improve the situation for other crops.

All the breeding stations visited were weak and lacked resources to do the range of evaluations necessary for effective selection of varieties. Plant breeding is barely in operation due to the

lack of funds to conduct field trials. A variety is usually planted continuously from the same original source for up to 10 years. This results in genetic drift, which causes changes in the performance and quality factors of a variety.

In time seed multiplication and distribution are both likely to go private, but that will not be easy as long as seeds continue to be given out in-kind, without specific charge. There will have to be a transition toward charging openly for seed, or at least valuing it in an accounting sense and then having a bank, a gin or a payment settlement bureau deduct it from liquidations.

5.5 Improve Tendering, Quality Assurance, and Distribution of Agrochemicals

The overall objective of this proposed intervention is to help make sure that in each C-4 country the vast majority of cotton farmers are ensured access to high-quality fertilizers and pesticides in a timely manner and at a delivered cost that fairly reflects world prices.

Cotton producers feel squeezed by a combination of declining world prices for cotton lint and rising costs of agrochemical inputs. Many growers and knowledgeable observers believe that the delivered (farm gate) price for agrochemical inputs is too high, both as a percentage of total price and relative to what costs should be if there were more competition, more efficient transport and distribution, more transparency, and less dependency on supplier credit.

5.6 Expand Agricultural and Rural Credit

The lack of access to agricultural and rural credit is a major problem in the different C-4 countries, some more than others. It does not seem to work well at all in Benin, whose agricultural development bank failed in 1990, so the main source of production credit for cotton in Benin is supplier credit obtained by the input suppliers and advance payments by ginners, both of which are run though the settlements and payments mechanism known as CSPR.

Cotontchad provides on credit almost all inputs needed to grow cotton in Chad, with the exception of agricultural equipment , which is sold on credit by the National Office of Rural Development (ONDR). In the case of Mali, credit for cotton is obtained through a banking group led by the National Agricultural Development Bank (BNDA). This is complemented by credit from an offshore banking pool led by the French Banque Societé Générale. CMDT also contributes a share, and this year the Cotton Producers Association (SYCOV) managed to mobilize some funds as well. The credit system for cotton seems to work best in Burkina Faso, where the national cotton company, SOFITEX, manages it in cooperation with Burkina Agricultural and Commercial Bank (BACB).

5.7 Develop Alternative Approaches To Technology Generation and Transfer for the Cotton Sector Under the Assumption of Privatization

During the pre-privatization period of the C-4 cotton sector, technology generation and transfer were handled across the cotton belt by the national agricultural research organizations (with close support from the French agricultural research institution Centre de Coopération Internationale en Recherche Agronomique pour le Développement, or CIRAD (Center for International Cooperation in Agricultural Research for Development) and the national cotton companies.

The literature and the anecdotal evidence suggest that very useful research was done—more or less in proportion to the size and growth rate of the sector—but that transfer to the farm-level was often inadequate (except for major topics such as varietal, fertilizer and pesticide recommendations. Apparently many farmers never saw an extension agent because there were too few, and as the sector expanded, it got worse.

Privatization did not help either. The dismantling of state-owned national cotton companies entails a risk that certain critical functions—among them technology generation and transfer—will no longer be adequately addressed because they are subject to economies of scale and have a strong public goods character. Private ginning and marketing companies whose profits derive only from cotton cannot reasonably be expected to deal with the complexities of the entire cotton-based farming system, or to collaborate much across territories.

While each of the C-4 countries still has an agricultural research entity (usually semi-autonomous) and also an agricultural extension organization—usually a department within the Ministry of Agriculture—they may or may not stay fully engaged in cotton as privatization proceeds. Atrophy and disorder already became evident in Benin's agricultural technology transfer system as SONAPRA was gradually dismantled. As privatization in Mali is approaching, CMDT cotton research activities continue, but alternative extension models are being tried. Chad's system is reportedly the weakest of all, largely due to lack of funding, while Burkina's system appears much stronger.

5.8 Arrest Soil Degradation and Loss of Fertility in Cotton Areas

Many informed observers believe that soil degradation/loss of fertility is the single most important constraint to food and economic security in West Africa. It already presents a serious problem in the production of food and commercial crops, and over the longer term threatens the sustainability of existing farming systems. Farmers in West Africa are mainly smallholders who must contend with increasing population pressure on available land, a low level of mechanization, short fallow, limited rotational options, and risky rainy seasons.[9] Their poverty, small scale of operation, inability to get bank credit, limited access to market, and low levels of technology all contribute to farming practices that can exacerbate soil degradation.

5.9 Expand the Use of Good Agricultural Practices in Cotton Farming Systems

As noted above, cotton has historically often been criticized for its potential harm to human, plant or animal life or the environment. The most critical topic of concern has usually been **pesticides**: selection, quality, overuse, misapplication, disposal of contains, fate and transport. In the C-4 countries especially, the next most important issue relating to production practices is arguably **soils management** (for which a separate intervention has been proposed). Within that topic, the main issues are maintenance of soil fertility, prevention of soil degradation, erosion, and soils mining. A third area of concern is **water management**: capture, runoff, groundwater contamination, impacts on potable water sources. A fourth topic of interest is

[9] Adapted from Alioune Fall and Adama Faye, "Minimum Tillage for Soil and Water Management with Animal Traction in the West-African Region," in *Conservation Tillage with Animal Traction: A Resource Book*, edited by P.G. Kaumbutho and T.E. Simalenga, ATNESA, 1999.

management of the costs of production, which are affected by suboptimal agronomic practices of all kinds.

Component technologies exist to address all of these issues associated with cotton production, even in the C-4 countries. CIRAD, in collaboration with the National Agricultural Research Organizations (NAROs) in each country, has also done considerable work on cotton production systems and on farming systems that include cotton. However, their work often does not get to farmers in large numbers, and even when it does, the rate of adoption may not be as high as hoped for. Research should focus on mechanisms to reduce the use of production practices that are potentially harmful to humans, animals, plants, or the environment, while encouraging the use of good agricultural practices in general, and in particular integrated pest management, appropriate pesticide use, and conservation farming.

5.10 Reduce Post-Harvest Losses and Costs through Better Practices, Handling and Logistics

This intervention seeks to improve the logistics of handling, storage and transport of seed cotton from the farm to the gin, of cotton seed from the gin to oilseed mills or foreign port of entry, and of cotton lint from the gin to the foreign port of entry for C-4 exports of cotton

Anecdotal evidence and field observations by the assessment team suggest that throughout the logistical supply chain for seed cotton, cotton lint and cotton seed, significant losses of volume and value occur, and at the same time significant excess costs are incurred. There are various causes: (1) the small lots and very basic transport methods that characterize small producers; (2) overloading of conveyances, which leads to spillage; (3) limited use of covers and tendency to leave products exposed to the elements for long periods; (4) lack of equipment such as module-builders (used in the US production system) needed to compress and then easily protect and transport the seed cotton before it can be ginned; (5) lack of storage facilities; and (6) underestimation of the nature and extent of the costs themselves.

5.11 Establish a West African Regional Ginning School

The purpose of this intervention would be to provide systematic training of gin managers and technicians in all of West Africa, including the C-4 countries, in order to improve the productivity and efficiency of ginning operations while improving the market quality of lint, cotton and by-products produced at the gins.

Although C-4 gins generally have good equipment, high output, and low-cost operations, there is always room for improvement (i.e., through better moisture management, better control of contamination, better handling procedures, and better storage of seed cotton and baled lint). Moreover, as privatization proceeds, changes on ownership and personnel turnover could lead to a decline in the levels of skills and experience. To the extent that producer groups gain ownership shares in newly privatized gins, they will need to be brought up to speed in all aspects of gin management, operation and maintenance.

However, even where the producers are not yet owners, they can still benefit indirectly from a ginning school to the extent that (1) the quality of their seed cotton is better preserved through the ginning process; (2) already high outturns of lint and cottonseed are preserved or improved;

(3) the ginning process becomes more efficient in terms of cost per bale; or (4) a greater share of the value added passes back to producers in the form of higher prices paid or higher post-season rebates.

5.12 Reduce Contamination in C-4 Seed Cotton and Lint

In response to a serious and growing problem suggested both by anecdotal evidence from the field interviews, and to objective data contained in the global survey of spinners that the International Textile Manufacturers' Federation (ITMF) undertakes every two years, this intervention seeks to significantly reduce contamination in C-4 cotton lint, particularly in Mali, Benin and Burkina Faso.

West African cotton producers take pride in and promote the quality of their cotton lint, claiming that the fact that it is hand-picked gives the region a comparative advantage in the marketplace over cotton that has been machine-stripped. In the 2001 ITMF Cotton Contamination Survey, only Mali appeared among the top 25 sources of contaminated cotton, ranking 24th. Yet for 2003, Burkina Faso appears as 14th, Mali as 20th, and Benin as 21st. (Chad ranked quite well in both surveys, far below the cut-off for the worst 25). This data seems to indicate retrogression in three of the four countries of interest.

During the field assessment, some anecdotal evidence of the contamination problem was observed. Various key informants alluded to it during interviews, stating that some substantial claims had been filed, presumably against exporters and or ginning companies. However, the most tangible evidence was seen in Mali, where managers of the modern spinning plant FITINA showed fabric just sent back from their parent company/customer in Mauritius, with minute defects circled clearly on the samples.

5.13 Improve the Quality of C-4 Cotton through Better Seed Cotton Grading and Lint Classing

While C-4 cotton is well valued in the marketplace, some of its potential value is lost to the sector in general and to growers in particular because of the prevailing seed cotton grading system and the cotton lint classing systems.

HVI Classification has resulted in a competitive advantage for the USA in global marketing. Establishment of an **adequate** HVI system for the cotton-producing countries in Africa and elsewhere would facilitate the access of their cotton to diverse global markets. Indeed, an official consensus on this issue has been reached by cotton producing and consuming nations of the world.

5.14 Better Manage Critical Risks Confronting the C-4 Cotton Sector

The West African cotton sector is exposed not only to the normal production, market, financial and *force majeure* risk that affect the industry worldwide, but also unique risks associated with high climatic variability, the structure and conduct of the *filière* system, and a different currency base. Unfortunately, given the fragility of the C-4 economies and smallholder livelihood strategies, neither the countries themselves nor the millions of small cotton farmers can afford to take such risks.

The most obvious risk is the possibility of a crop failure. A second important risk, which stretches all along the supply chain from assembly point through the gin to transfer of title at a foreign port of entry, concerns logistical failures and quality deterioration, which can be one and the same or different. The third kind of risk relates to the price levels of cotton lint and cottonseed, and the volatility associated with them both. The fourth type of risk derives from the relative value of the CFA versus the Euro and versus the dollar. A fourth risk, which derives in part from mismanagement of the previous ones, relates to the timeliness and completeness of payment of agreed-upon prices for seed cotton and payment or not of rebates *(ristournes)*. A fifth risk, which has become one of the most critical in Benin and Mali, arises from uncertainty about the timing and content of policy reform (such as privatization or liberalization) and of policy decisions (such as the floor price or final purchase price of seed cotton).

5.15 Improve Competitiveness of Selected C-4 Textile and Apparel Enterprises

In response mainly to the need expressed by the ministers for assistance in cotton-related processing and value added, and in furtherance of AGOA objectives, this intervention seeks in a limited, targeted manner to ameliorate the competitive disadvantages that the C-4 countries now have in global textiles and apparel and to help foster international business linkages.

A very small percentage of C-4 (and West African cotton) is subjected locally to value-adding processes. Approximately 98% of lint production is exported as “cotton lint, whether or not carded or combed.” Of 41 textile plants installed since 1980, only 20 were still operating at the end of 2002. None of the C-4 countries have been able to export wearing apparel to the United States under AGOA. The benefits of low-cost cotton lint are more than offset by a combination of very high electricity rates, high transport and port handling charges, invisible costs caused by corruption, relatively high labor costs coupled with low productivity, outdated technology and equipment, and lack of economies of scale. Nonetheless, the example of the Fitina spinning plant in Mali, which is producing cotton yarn for AGOA production in Mauritius, demonstrates that there is potential for C-4 enterprises to find a meaningful and productive role in the AGOA production chain, even if they do not produce apparel. With respect to the WAEMU regional market, which is estimated to be 700 million CFA in size, fraudulent (i.e., non duty-paid goods) are believed to have 49% share, the rest being supplied in equal parts by used clothing, legal imports, and local production. Lacking effective intellectual property rights protection, even the best local design firms cannot compete with Asian suppliers capable of copying new ideas and converting them to lower-cost fabrics and apparel in a matter of weeks.

6. Conclusion and Closing Comments

For many decades, cotton has been the most important exportable crop for Benin, Burkina Faso, Chad and Mali as well as Senegal. The current assessment demonstrates that although there is a long commercial and economic history of cotton in the West African region, there is much to indicate that the competitive advantage that once existed for these countries has been severely challenged, both internally and externally.

In order for the C-4 countries to re-establish the competitive advantage there is much to be done, beginning with the redesign of government policy and tax laws that encourages the production and domestic transformation of the raw fiber and the commercial export of the products, either raw or value-added.

In the current document there are several suggestions and comments about the cotton sector in the West African countries studied, involving producers, as well as governments, in collaboration with the private sector. In total, there are a number of ways of improving the sector, including improvements in production, internal markets, and research in agricultural technologies.

It is important to take into consideration that although this document is not necessarily a plan of action, it is one of the assessment tools that will fit into a larger and more comprehensive evaluation of the sector and the possible responses that the United States government may develop. This is an assessment of the cotton sector in these five West African nations where cotton plays an important economic and commercial role.

It is important to think long term and keep in mind a sustainable development process in this and other agricultural sectors. It is equally important to envision a possible program that will be designed as a partnership with the various international institutions that are already designing and implementing programs in cotton so as to have the greatest impact and avoid misusing scarce resources.

The United States government is taking positive action to engage with the various international institutions such as the World Bank and the European Union and the individual bilateral donor nations in a spirit of collaboration to reach this common goal.

We hope that this evaluation helps to start the constructive discussion between these different partners in order to find concrete solutions and assist the economically marginalized populations of this region.

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